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WOWs for light-driven micro- and nano-probing

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Nano-probing and opto-mechanically stimulating specific parts in a biological sample can reveal much information about its function as well as the effects on the organism as a whole. Inherently such experiments require working as close to the sample as possible. An example of such a biological sample is a mammalian cells which can be several tens of microns in size. In this case we require high NA optics for probing and stimulation but viewing the whole organism may require low NA optics. Hence, we have proposed and pioneered a structure-mediated approach by using micro-tools consisting of free-floating waveguides with sub-micron tips. The opto-mechanical waveguides are trapped and held by spherical handles which serve as invisible hands for optical manipulation hence the name Wave-guided Optical Waveguides (WOWs). The latest achievements using these proprietary WOWs will be demonstrated.

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